

WHAT IS CLAIMED IS:

1. A collection of particles comprising metal vanadium oxide, the particles having an average diameter less than about 500 nm.
2. The collection of particles of claim 1 wherein the particles have an average diameter from about 5 nm to about 100 nm
3. The collection of particles of claim 1 wherein the particles have an average diameter from about 5 nm to about 50 nm.
4. The collection of particles of claim 1 wherein the metal vanadium oxide comprises silver vanadium oxide.
5. The collection of particles of claim 1 wherein the metal vanadium oxide comprises  $\text{Ag}_2\text{V}_4\text{O}_{11}$ .
6. The collection of particles of claim 1 wherein effectively no particles have a diameter greater than about four times the average diameter of the collection of particles.
7. The collection of particles of claim 1 wherein effectively no particles have a diameter greater than about two times the average diameter of the collection of particles.
8. The collection of particles of claim 1 wherein the collection of particles have a distribution of particle sizes such that at least about 95 percent of the particles have a diameter greater than about 40 percent of the average diameter and less than about 160 percent of the average diameter.
9. The collection of particles of claim 1 wherein the collection of particles have a distribution of particle sizes such that at least about 95 percent of the particles have a diameter greater than about 60

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percent of the average diameter and less than about 140 percent of the average diameter.

10. A method of producing particles of metal vanadium oxide comprising heating a mixture of vanadium oxide particles with a non-vanadium metal compound, the vanadium oxide particles having an average diameter less than about 500 nm.

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11. The method of claim 10 wherein the vanadium oxide particles have an average diameter from about 5 nm to about 100 nm.

12. The method of claim 10 wherein the non-vanadium metal compound comprises silver nitrate.

13. The method of claim 10 wherein the vanadium oxide particles comprise crystalline  $V_2O_5$ .

14. The method of claim 10 wherein the heating is performed at a maximum temperature from about 200°C to about 330°C.

15. The method of claim 10 wherein the heating is performed at a maximum temperature from about 200°C to about 300°C.

16. The method of claim 10 wherein the heating is performed for less than about 20 hours.

17. A battery comprising a positive electrode having active particles comprising metal vanadium oxide within a binder, the active particles having an average diameter less than about 500 nm.

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18. The battery of claim 17 wherein the active particles have an average diameter from about 5 nm to about 100 nm.

19. The battery of claim 17 wherein the metal vanadium oxide comprises silver vanadium oxide.

20. The battery of claim 19 wherein the silver vanadium oxide comprises  $Ag_2V_4O_{11}$ .

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21. The battery of claim 17 wherein the metal vanadium oxide comprises ~~copper~~ vanadium oxide.

22. The battery of claim 17 wherein the positive electrode further comprises supplementary, electrically conductive particles.

23. The battery of claim 17 wherein effectively no active particles have a diameter greater than about four times the average diameter of the collection of active particles.

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